

# Service Manual

## Color Television

**CHASSIS : CN-001GF**

**Model : DTQ-2133SSN**

**DTQ-21U4SSN**

**DTQ-2133SSFN**

**Caution**

: In this Manual, some parts can be changed for improving. their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List)in Service Information Center.

**DAEWOO**  
ELECTRONICS

**DC**  
SEP. 2005

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# PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO - VIDEO PRODUCTS

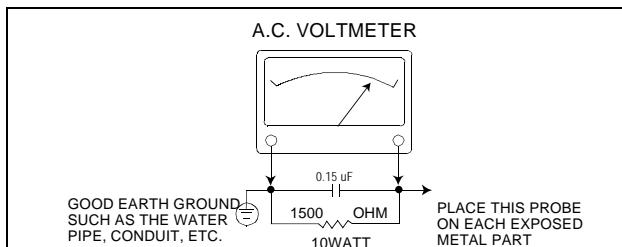
**CAUTION :** DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY. SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER. WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

## SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED, A CHECK SHOULD BE MADE OF THE FOLLOWING:

## SUBJECT: FIRE & SHOCK HAZARD

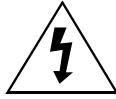
1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE, THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OF SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS, FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD), AND REPLACE IF NECESSARY. FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTOR, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES. DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET. (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS, HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER: CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD. 150V A.C. TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART. VOLTAGE MEASURED MUST NOT EXCEED .75 VOLTS R.M.S THIS CORRESPONDS TO 0.5 MILLIAMP A.C. ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



## SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION ON SERVICE LITERATURE.

## SUBJECT : X-RADIATION

1. BE SURE PROCEDURES AND INSTRUCTIONS TO ALL SERVICE PERSONNEL COVER THE SUBJECT OF X-RADIATION. THE ONLY POTENTIAL SOURCE OF X-RAYS IN CURRENT T.V. RECEIVERS IS THE PICTURE TUBE HOWEVER, THIS TUBE DOES NOT EMIT X-RAYS WHEN THE HIGH VOLTAGE IS AT THE FACTORY SPECIFIED LEVEL. THE PROPER VALUE IS GIVEN IN THE APPLICABLE SCHEMATIC. OPERATION AT HIGHER VOLTAGES MAY CAUSE A FAILURE OF THE PICTURE TUBE OR HIGH VOLTAGE SUPPLY AND UNDER CERTAIN CIRCUMSTANCES, MAY PRODUCE RADIATION IN EXCESS OF DESIRABLE LEVELS.
2. ONLY FACTORY SPECIFIED C.R.T ANODE CONNECTORS MUST BE USED. DEGAUSSING SHIELDS ALSO SERVE AS X-RAY SHIELD IN COLOR SETS. ALWAYS RE-INSTALL THEM.
3. IT IS ESSENTIAL THAT SERVICE PERSONNEL HAVE AVAILABLE AN ACCURATE AND RELIABLE HIGH VOLTAGE METER. THE CALIBRATION OF THE METER SHOULD BE CHECKED PERIODICALLY AGAINST A REFERENCE STANDARD, SUCH AS THE ONE AVAILABLE AT YOUR DISTRIBUTOR.
4. WHEN THE HIGH VOLTAGE CIRCUITRY IS OPERATING PROPERLY THERE IS NO POSSIBILITY OF AN X-RADIATION PROBLEM. EVERY TIME A COLOR CHASSIS IS SERVICED, THE BRIGHTNESS SHOULD BE RUN UP AND DOWN WHILE MONITORING THE HIGH VOLTAGE WITH A METER TO BE CERTAIN THAT THE HIGH VOLTAGE DOES NOT EXCEED THE SPECIFIED VALUE AND THAT IT IS REGULATING CORRECTLY. WE SUGGEST THAT YOU AND YOUR SERVICE ORGANIZATION REVIEW TEST PROCEDURES SO THAT VOLTAGE REGULATION IS ALWAYS CHECKED AS A STANDARD SERVICING PROCEDURE, AND THAT THE HIGH VOLTAGE READING BE RECORDED ON EACH CUSTOMER'S INVOICE.
5. WHEN TROUBLESHOOTING AND MAKING TEST MEASUREMENTS IN A PRODUCT WITH A PROBLEM OF EXCESSIVE HIGH VOLTAGE, AVOID BEING UNNECESSARILY CLOSE TO THE PICTURE TUBE AND THE HIGH VOLTAGE SUPPLY. DO NOT OPERATE THE PRODUCT LONGER THAN IS NECESSARY TO LOCATE THE CAUSE OF EXCESSIVE VOLTAGE.
6. REFER TO HV, B+ AND SHUTDOWN ADJUSTMENT PROCEDURES DESCRIBED IN THE APPROPRIATE SCHEMATIC AND DIAGRAMS (WHERE USED).

## SUBJECT : IMPLOSION

1. ALL DIRECT VIEWED PICTURE TUBES ARE EQUIPPED WITH AN INTEGRA IMPLOSION PROTECTION SYSTEM. BUT CARE SHOULD BE TAKEN TO AVOID DAMAGE DURING INSTALLATION. AVOID SCRATCHING THE TUBE. IF SCRATCHED REPLACE IT.
2. USE ONLY RECOMMENDED FACTORY REPLACEMENT TUBES.

## SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE, OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERY MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT, MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS. A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM. BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

# PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

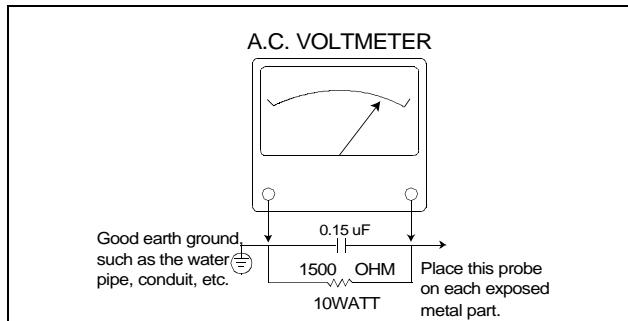
**CAUTION :** Do not attempt to modify this product in any way. Unauthorized modifications will not only void the warranty, but may lead to your being liable for any resulting property damage or user injury. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines. To do otherwise, increases the risk of potential hazards and injury to the user.

## SAFETY CHECKS

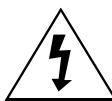
After the original service problem has been corrected, a check should be made of the following:

### SUBJECT : FIRE & SHOCK HAZARD

1. Be sure that all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the repair shop.
2. Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.
3. Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including A.C. cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particals.
4. Check for physical evidence of damage or deterioration to parts and components, and replace if necessary follow original layout, lead length and dress.
5. No leads or components should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. All critical components such as fuses, flameproof resistors, capacitors, etc. must be replaced with exact factory types. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. After re-assembly of the set always perform an A.C. leakage test on all exposed metallic parts of the cabinet, (the channel selector knob, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this test. Use an A.C. voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner : connect a 1500 ohm 10 watt resistor, paralleled by a 15 mfd. 150V A.C. type capacitor between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the A.C. voltage across the combination of 1500 ohm resistor and 0.15 MFD capacitor. Reverse the A.C. plug and repeat A.C. voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 volts R.M.S. This corresponds to 0.5 milliamp A.C. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



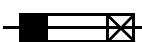
## GRAPHIC SYMBOLS :



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the service personnel to the presence of uninsulated "dangerous voltage" that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the service personnel to the presence of important safety information in service literature.



Fuse symbol is printed on pcb adjacent to the fuse, with "RISK OF FIRE REPLACE FUSE AS MARKED". The symbol is explained in the service manual with the following wording or equivalent.

**"CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE (4A, 125V)" and "ATTENTION: AFIN D'ASSU UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET DE "4A, 125V".**

### SUBJECT : X-RADIATION

1. Be sure procedures and instructions to all service personnel cover the subject of X-rays in current T.V. receivers is the picture tube. However, this tube does not emit X-rays when the high voltage is at the factory specified level. The proper value is given in the applicable schematic. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.
2. Only factory specified C.R.T. anode connectors must be used. Degaussing shields also serve as X-ray shield in color sets. Always re-install them.
3. It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard. Such as the one available at your distributor.
4. When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure. And that the high voltage reading be recorded on each customer's invoice.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.
6. Refer to HV, B+ and Shutdown adjustment procedures described in the appropriate schematic and diagrams (where used).

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**SUBJECT : IMPLOSION**

1. All direct viewed picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube. If scratched, replace it.
2. Use only recommended factory replacement tubes.

**SUBJECT : TIPS ON PROPER INSTALLATION**

1. Never install any receiver in closed-in recess, cubbyhole or closely fitting shelf space over, or close to heat duct, or in the path of heated air flow.
2. Avoid conditions of high humidity such as : Outdoor patio installations where dew is a factor. Near steam radiators where steam leakage is a factor, etc.
3. Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.

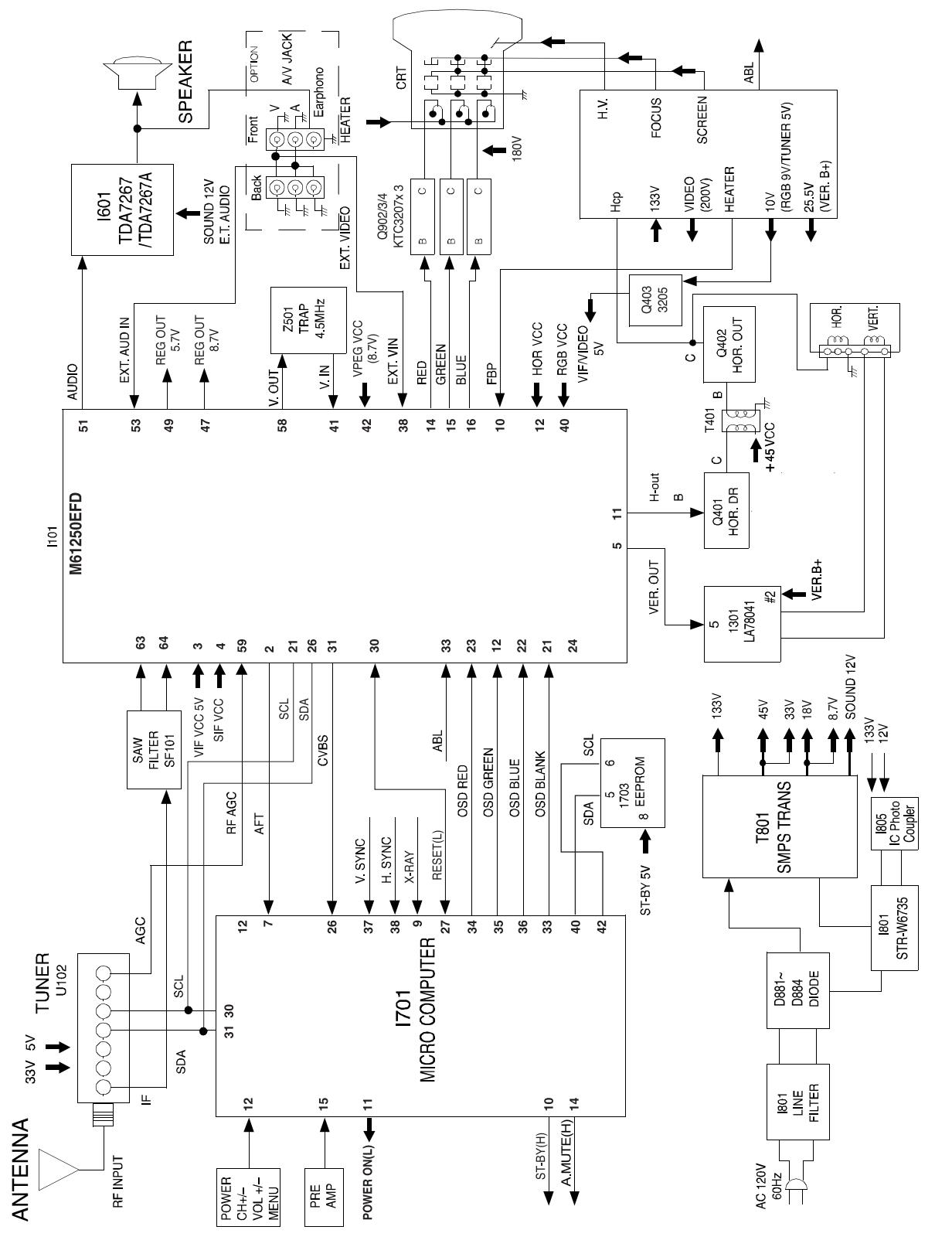
4. Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions. A receiver mounted to a shelf or platform must retain its original feet(or the equivalent thickness in spacers) to provide adequate air flow across the bottom, bolts or screws used for fasteners must not touch any parts or wiring. Perform leakage test on customized installations.

5. Caution customers against the mounting of a receiver on sloping shelf or a tilted position, unless the receiver is properly secured.
6. A receiver on a roll-about cart should be stable on its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
7. Caution customers against the use of a cart or stand which has not been listed by underwriters laboratories, inc. For use with their specific model of television receiver or generically approved for use with T.V.'s of the same or larger screen size.

# SPECIFICATIONS

ITEM \ MODEL	DTQ-2133SSN DTQ-21U4SSN	DTQ-2133SSFN	REMARK
TV STANDARD	NTSC - M		
POWER INPUT	110V	FREE	
POWER CONSUMPTION	65 WATTS		
TUNING SYSTEM	FREQUENCY SYNTHESIZER		
TUNING RANGES	VHF : 2 ~ 13 (12) UHF : 14 ~ 69 (56) CATV : 1 ~ 125 (125)		
SOUND OUTPUT	1.3W+1.3W		
SPEAKER	8ohm 3W		
ANTENNA INPUT IMPEDANCE	75ohm Unbalanced		
AUXILIARY INPUT TERMINAL	Front : Video, Audio Rear : Video, Audio		
INTERMEDIATE FREQUENCIES	Picture IF Carrier Frequency : 45.75MHz Sound IF Carrier Frequency : 41.25MHz Color Sub- Carrier Frequency : 3.579545MHz		
REMOTE CONTROL	R-48C04		
SPECIAL FUNCTIONS	3-Language OSD With CAPTION Wakeup On/Off Time Sleep Timer Power Restore		

# BLOCK DIAGRAM



# ALIGNMENT INSTRUCTIONS

## 1. SERVICE MODE ADJUSTMENTS

Follow the steps below whenever service adjustment is required. See Table- A and Table- B to determine if service adjustments are required.

### 1) How to enter the service mode using the user remote control.

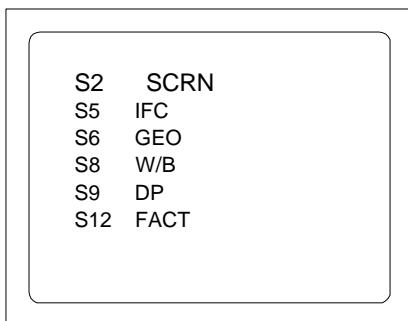
Turn the set on.

Direct the remote control to the reception window of TV.

Push buttons of remote control in sequence as follows.

**1 ® MUTE ® DISPLAY ® MUTE**

Then, the screen will appear as follows.



Using the channel up or channel down button, select the item you wish to adjust.

(The color of selected item turns into the red.)

Press the volume up or down button to enter in the service mode you wish to adjust.

### 2) How to memorize the adjusted values in the service mode.

Must press **DISPLAY** button the state which the screen is displaying each of service menus after all adjustments are completed each of all service menu.

Table-A : Adjust the values of service mode when a part is replaced.

PART REPLACED	ADJUSTMENT		NOTES								
	NECESSARY	UNNECESSARY									
I701 (U-COM)		O	Data is stored in I703.								
I101 (MAIN)		O									
I703 (EEPROM)	O		<p>Initial setting values are written from I701.</p> <p>Adjusting Items</p> <table border="1"><tr><td>S5</td><td>RFAGCD</td></tr><tr><td>S6</td><td>H.SHIFT/V.SHIFT/V.SIZE</td></tr><tr><td>S8</td><td>RD/BD/RB/GB/BB</td></tr><tr><td>S9</td><td>Brightness</td></tr></table>	S5	RFAGCD	S6	H.SHIFT/V.SHIFT/V.SIZE	S8	RD/BD/RB/GB/BB	S9	Brightness
S5	RFAGCD										
S6	H.SHIFT/V.SHIFT/V.SIZE										
S8	RD/BD/RB/GB/BB										
S9	Brightness										
CRT	O		Adjust items related to picture tube only.(White Balance adjustment)								

## ALIGNMENT INSTRUCTIONS

Table-B

MODE	ADJUSTMENT ITEMS	DATA			REMARKS
		INITIAL	RANGE		
S2	Screen Adjustment	-	-		
S5	Auto Vco	OK	OK, NG		
	VIF VCO Adj	36	0~63		
	Auto Hvco	OK	OK, NG		
	H Vco adj	04	0~7		
	Auto RFAGC	OK	OK, NG		
	RF-DELAY	90	0~125	Align RF AGC threshold	
	AGC Point	3.75	3.25/3.5/3.75/4.0	Select AGC reference voltage	
S6	VCO CH NO	AGC CH NO	22	10	-
	H.Shift(Horizontal Shift)	09	0~15		
	V.Shift(Vertical Shift)	02	0~7		
	V.Size(Vertical Size)	32	0~63		
	VBLK Shift	03	0~7		
	VBLK Shift On	NO	NO,YES		
S7(1)	NO SD POWER OFF		NO	NO,YES	Automatically turn off in 15min for no received signal
	Vif F	HTONE SW	0	0	0,1
	C Clip Level	White Back	1	0	0,1
	TRAP Off	V Free	0	0	0,1
	EXT	Gamma Control	0	0	0~3
	Y DL Fine	Trap Fine ad	1	0	0~3
	Y DL Time	H Free	3	0	0~3
	VOUT_STOP	WINDOW	0	0	0,1
	Fsc Free	Y SW LPF	0	1	0,1
	V Mute	FM Level	ON	15	ON,OFF
S7(2)	Service SW		0	0	0,1
	AFC1 Gain		1	0	0,1
	AFC2 Gain		0	0	0,1
	Analog OSD		0	0	0,1
	US/JA SW		4	0	0~7
	SYNC DET		0	0	0,1
	Auto Slice Down		0	0	0,1
	FBL Vth L		1	0	0,1
	BGpFbp OFF		0	0	0,1
	VIF VIDEO OUT GAIN		4	0	0~7
S8(1)	RD(Red Drive)		64	0~127	Align RED OUT AC level
	BD(Blue Drive)		64	0~127	Align BLUE OUT AC level
	RB(Red Bias)		128	0~255	Align RED OUT DC level
	GB(Green Bias)		128	0~255	Align Green OUT DC level
	BB(Blue Bias)		128	0~255	Align BLUE OUT DC level
S8(2)	SCR R-BIAS		00	0~255	
	SCR G-BIAS		127	0~255	
	SCR B-BIAS		00	0~255	
	SCR R-DRIVE		63	0~127	
	SCR B-DRIVE		63	0~127	
	SCR BRIGHT		140	0~255	
S9	Brightness		75	0~155	Align common RGB DC level
	Contrast		10	0~27	
	Tint		36	0~77	
	Color		15	0~27	
	Sharpness		38	0~43	
S11	Video Tsharp	SsliceDown2	1	0	0,1
	ABCL	SsliceDown1	0	1	0,1
	Blackstre.off	OSD level	0	1	0,1
	Take off	Killer level	0	1	0,1
	ABCL Gain		0	0	0,1
	AFT defeat		0	0	0,1
	HVBLK off		0	0	0,1
	Black stretch discharge		2	0	0~3
	Black stretch charge		0	0	0~3
S12	Forwarding Mode				Factory Initialization

## 2. ASSEMBLY ADJUSTMENTS

### 1) SCREEN ADJUSTMENT (S2)

- Enter the service mode and select service adjustment S2.
- You can see the one horizontal line on the screen.
- Adjust the Screen Control Volume (located on FBT) so that the horizontal line onscreen may be disappeared.
- Press the volume up or down button to exit in the screen adjustment mode.

#### NOTE

IN THE SCREEN ADJUSTMENT MODE, DONT PRESS OTHER BUTTONS EXCEPT VOLUME UP OR DOWN BUTTON.

### 2) FOCUS ADJUSTMENT

- Turn in a local station and adjust the Focus Control knob (located on FBT) for best picture details at high light condition.

### 3) RF AGC DELAY ADJUSTMENT (S5)

- Receive a good local channel.
- Enter the service mode and select service adjustment S5.
- You can see the OSD as shown in below.

IF CONTROL	
AUTO VCO	OK
VIF VCO ADJ	36
AUTO HVCO	OK
HVCO ADJ	04
AUTO RFAGC	START
RF-DELAY	90
AGC POINT	3.75
VCO CH NO 22	AGC CH NO 10

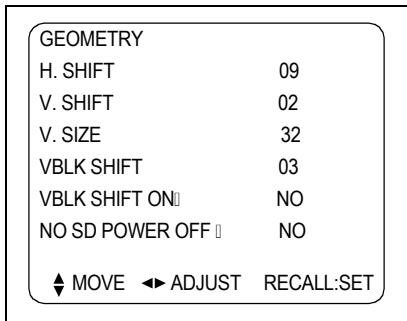
- Select RFAGCD item, press the volume up or down button until noise or beat in picture disappears.
- Press the DISPLAY button to memorize the data.

## ALIGNMENT INSTRUCTIONS

### 4) GEOMETRIC ADJUSTMENTS (S6)

- Enter the service mode and select service adjustment S6.

- You can see the OSD as shown in below.



#### 4-1. Horizontal SHIFT Adjustment

- Select H.SHIFT item, adjust H.SHIFT data value to obtain proper horizontal centering of the internal cross pattern at the left and right of the screen.

#### 4-2. Vertical SHIFT Adjustment

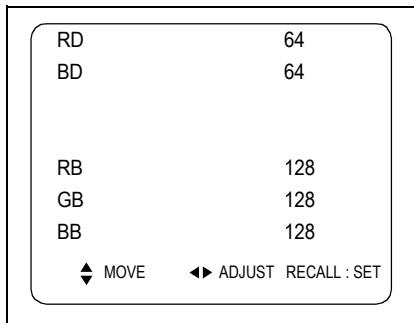
- Select V.SHIFT item, adjust V.SHIFT data value to center the raster properly on the screen.

#### 4-3. Vertical Size Adjustment

- Select "V.SIZE" item, adjust "V.SIZE" data value to proper vertical size as follows.

**5) WHITE BALANCE ADJUSTMENT(S8)**

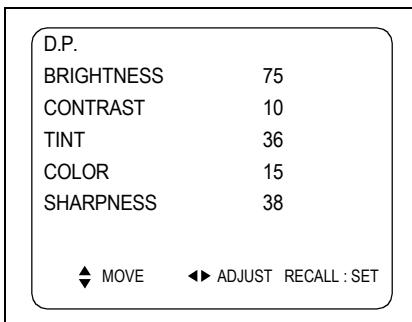
- Receive a good local channel.
- Enter the service mode and select service adjustment S8.
- You can see the OSD as shown in below.



- Using volume up or volume down, adjust service adjustment data of RD/GD/BD and RB/GB/BB until a good gray scale with normal whites is obtained.
- Press the DISPLAY button to memorize the data.

**6) DIGITAL PRESET(D.P) ADJUSTMENTS(S9)****SUBBRIGHTNESS ADJUSTMENT**

- Receive a good local channel.
- Enter the service mode and select service adjustment S9.
- You can see the OSD as shown in below.



- Select Subbrightness item, adjust Subbrightness data value to obtain normal brightness level.
- Press the DISPLAY button to memorize the data.

**CONTRAST**

- Fixed value = 10

**TINT**

- Fixed value = 36

**COLOR**

- Fixed value = 15

**SHARPNESS**

- Fixed value = 38

**7) FACTORY OUTGOING MODE (S12 : FACT)**

- If you select the S12, then the set becomes factory outgoing status.
- You can see the OSD "outgoing OK"

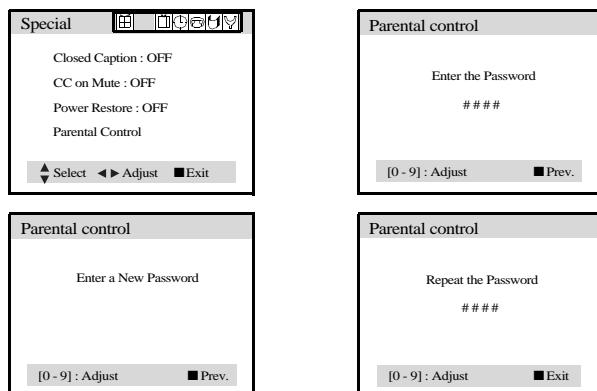
## ALIGNMENT INSTRUCTIONS

### 3. PARENTAL CONTROL PASSWORD SETTINGS

If user forget Parental Control Password as follows.

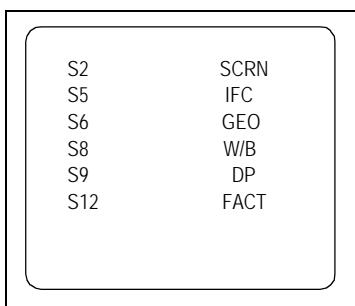
#### 1) CHANGE THE PASSWORD.

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR
- Using the MENU buttons, select the Special menu.
- Using the channel up (▲) or down (▼) buttons, select parental control.
- Using the volume up (►), set the password Menu.
- Push buttons of remote control in sequence as follows.  
2 → 2 → 1 → 1
- Parental control password is reset.
- Using the 0~9 buttons, enter the password.
- Using the 0~9 buttons, repeat the password.



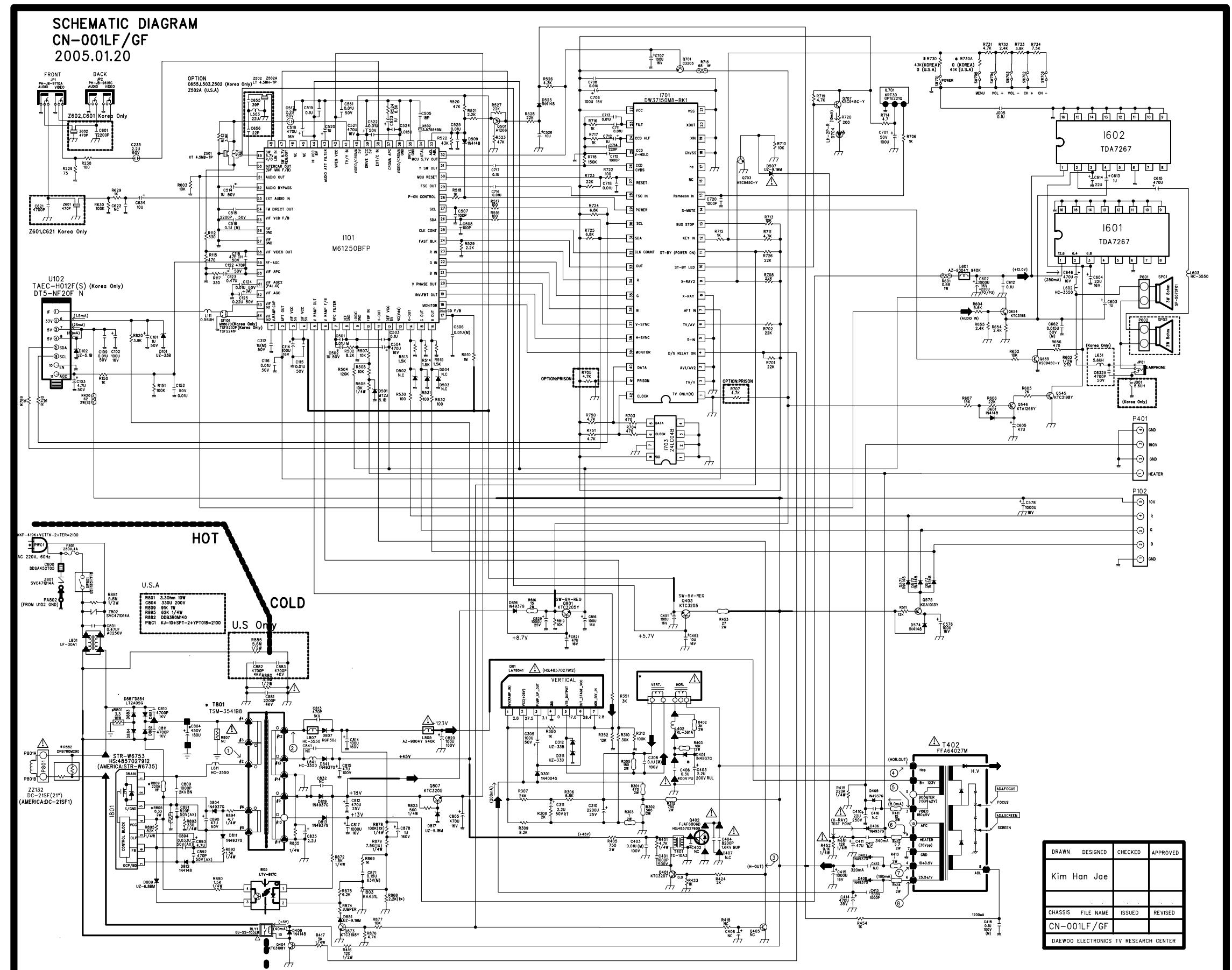
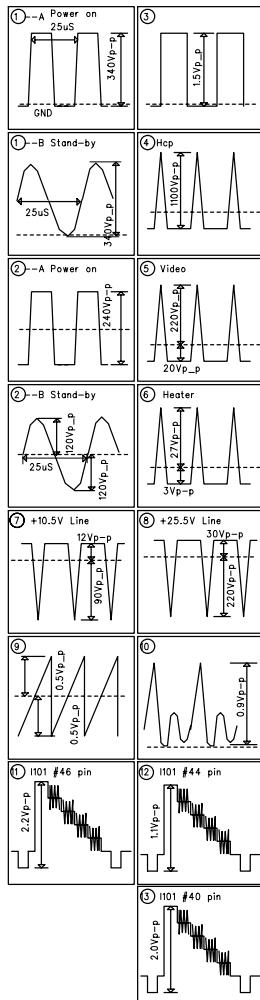
#### 2) RESET THE PASSWORD

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR.
- Push buttons of remote control in sequence as follows.  
1 → MUTE → DISPLAY → MUTE
- Then, the screen will appear as follows.

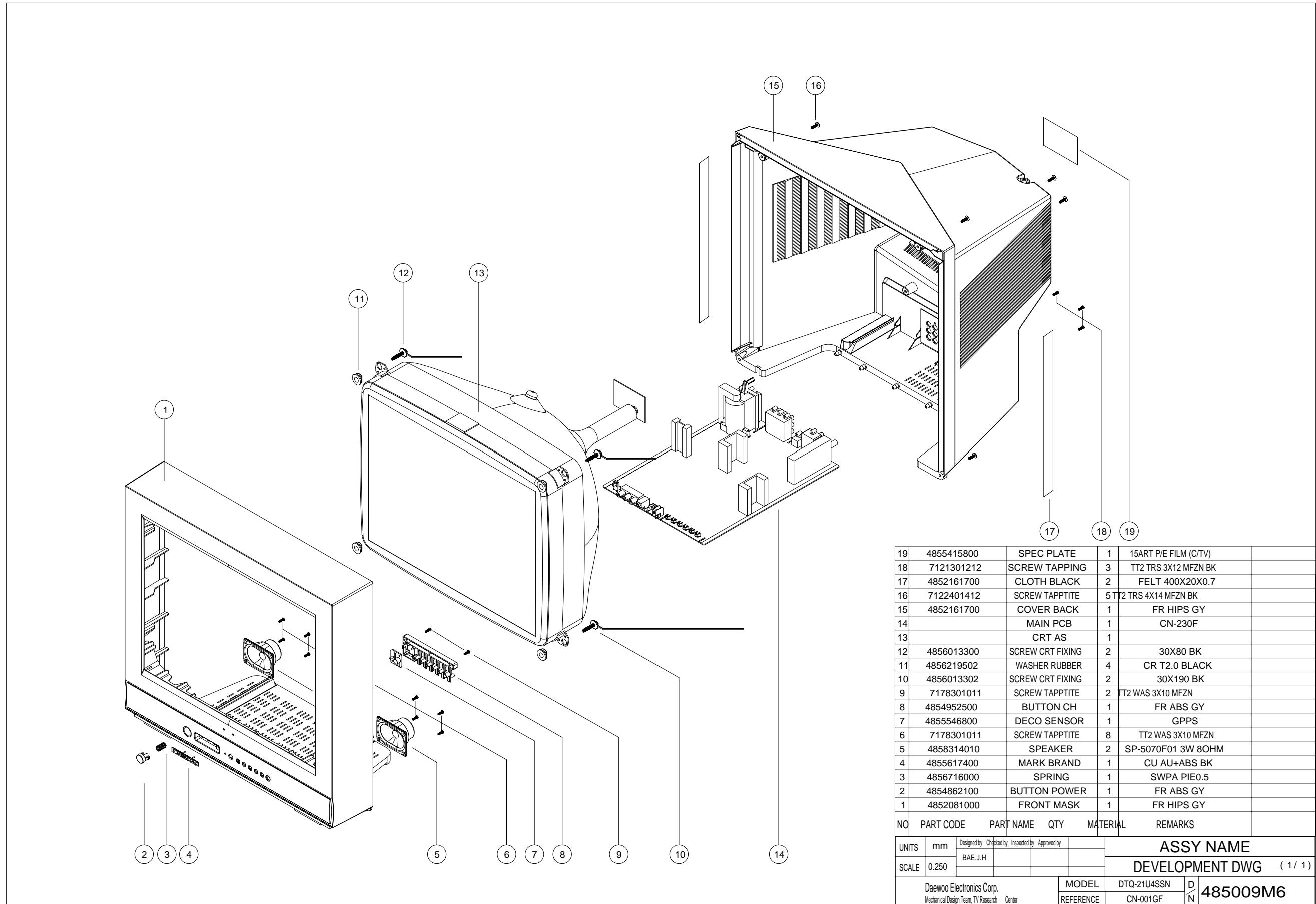


- Using the channel up (▲) or down (▼) buttons, select S12 FACT.  
Press the volume up (►) button, the set becomes factory outgoing status.
- Parental control password is reset.
- Using the MENU buttons, select the parental control menu, set the new password.

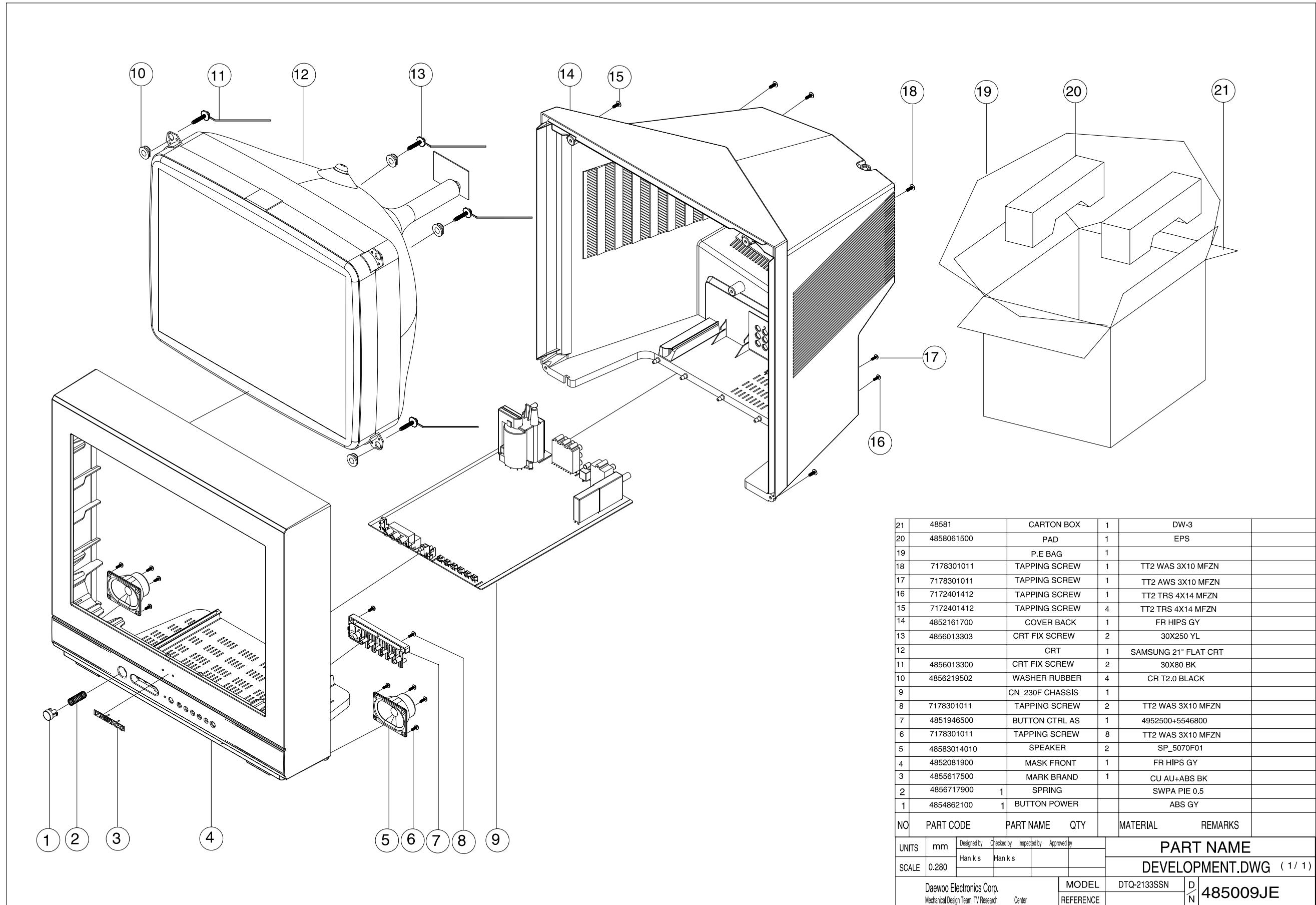
## SCHEMATIC DIAGRAM



# EXPLODED VIEW



## EXPLODED VIEW



# ELECTRICAL PARTS LIST

## CAUTION

“△” is a safety part, so it must be used the same part.

“®” is a recommendable part for essential stock.

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
ZZ100	48B5748C04	TRANSMITTER REMOCON	R-48C04 (AAA)		L401	58H0000055	COIL H-LINEARITY	TRL-361A	
ZZ110	PTACPWK123	ACCESSORY AS	DTQ-21U4SSN		L801	5PLF30A1—	FILTER LINE	LF-30A1	△
00010	4850A02510	ANT ROD	S3BW216B (L=600 MM)		M681	4856812001	TIE CABLE	NYLON66 DA100	
00030	4850Q00910	BATTERY	R03NN		PWC1	4859902710	CORD POWER AS	KJ-10+SPT-2+YPT018-2100	△ , ®
00040	4850A00650	TRANS ANT MATCHING	YSC-T-07 BR		Q402	PTL2SW7609	HEAT SINK ASS'Y	TKTD2499— + 7174301011	®
10000	48586001E2	MANUAL INSTRUCTION	DTQ-20V1FS		00001	TKTD2499—	TR HORI	TKTD2499	
M821	4858213803	BAG INSTRUCTION	L.D.P.E TO.05X250X400(+20)		0000A	4857027609	HEAT SINK	AL EX	
ZZ120	PTBCSHK123	COVER BACK AS	DTQ-21U4SSN		0000B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
M211	4852161701	COVER BACK	HIPS GY 21U4		R801	RX10B109UQ	R CEMENT	10W 1 OHM J BEN 25MM 4P	
M781	4857817630	CLOTH BLACK	FELT 400X20X0.7		R882	DDB3R0M140	POSISTOR	ECPBD3R0M140	
ZZ130	PTPKCPK116	PACKING AS	DTQ-21U4M		RLY1	5SC0101335	SW RELAY	DY2-5	△
10	6520010100	STAPLE PIN	AUTO W65		SF101	5PTSF5241P	FILTER SAW	TSF5241P	
M801	4858061500	BOX CARTON	DW-3 21U4		SW801	5S40101146	SW POWER PUSH	SS-160-7-B	
M811	4858100B00	PAD	EPS 21U4		T401	5DD10A3—	TRANS DRIVE	TD-10A3	
M821	4858219101	BAG P.E	P.E FOAM TO.5X1300X1150		T402	5OH0000261	FBT	BSC29-0141D	△ , ®
ZZ131	48519A7610	CRT GROUND NET	2103S-1015-1P		T801	50M3541B8-	TRANS SMPS	TSM-3541B8	△
ZZ132	58G0000178	COIL DEGAUSSING	DC-21F1 AL		U102	4859726730	TUNER VARACTOR	TAEC-H012F(A)	△ , ®
ZZ140	PTCACAK128	CABINET AS	DTQ-2133SSN		Z802	DSVC471D14	VARISTOR	SVC471D14A (BULK)	△
40	2TF01612CL	TAPE FILAMENT	0.15X12mmX55mm		ZZ200	PTMPJ2K123	PCB MAIN CHIP MOUNT B AS	DTQ-21U4SSN	
M201A	4856017303	SCREW CRT FIX	5X30 L80 BK		I101	1M61250FP-	IC CHIP CHROMA	M61250BFP	
M201B	4856017310	SCREW CRT FIX	5X30 L190 BK		I701	1DW150MAA2	IC CHIP MICOM	DW37150M8-AA2(088FP)	
M201C	4856219502	WASHER RUBBER	CR T20 BLACK		I805	1LTV817C-Q	IC CHIP PHOTO COUPLER	LTV-817C TRAY	△
M211A	7172401412	SCREW TAPPTITE	TT2 TRS 4X14 MFZN BK		ZZ200	PTMPJ0K123	PCB MAIN (RHU) AS	DTQ-21U4SSN	
M541	4855415800	SPEC PLATE	150ART P/E FILM (C/TV)		C310	CEXF1E222V	C ELECTRO	25V RSS 220MF (16X25) TP	
M591	4855930900	DECO TERM	PVC CL T0.2		C405	CEXA2D229E	C ELECTRO	200V RUL 2.2MF (10X16) TP	
M681	4856812001	TIE CABLE	NYLON66 DA100		C410	CEXF2E220V	C ELECTRO	250V RSS 22MF (13X20) TP	
SP01A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN		C414	CEXF1V471V	C ELECTRO	35V RSS 470MF (10X20) TP	
SP01B	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN		C415	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
V901	4859641460	CRT	A510QJ470X03 P38	△ , ®	C504	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
ZZ200	PTFMSJK128	MASK FRONT AS	DTQ-2133SSN		C518	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
M191	4851948101	BUTTON CTRL	4952501+5546801		C521	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
M191A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN		C578	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
M201	4852081901	MASK FRONT	HIPS GY		C602	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
M481	4854862101	BUTTON POWER	ABS GY 21U4		C615	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
M481A	4856716000	SPRING	SWPA PIE0.5		C646	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
M561	4855617500	MARK BRAND	CU AU+ABS BK		C805	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
ZZ210	PTSPWK103	SPEAKER AS	DTN-21U4FJN		C809	CBXB3D102K	C CERA SEMI	2KV BL(N) 1000PF K (T)	
PA601	4850703S51	CONNECTOR	YH025-03-35098-ULW-300		C810	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)	
PA602	4850703S55	CONNECTOR	YH025-03+35098+ULW-700		C811	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)	
SP01	4858314010	SPEAKER	SP-5070F01 3W 8 OHM	®	C812	CEXF1E471V	C ELECTRO	25V 470MF 10X12.5	
SP02	4858314010	SPEAKER	SP-5070F01 3W 8 OHM	®	C813	CBXB3D471K	C CERA SEMI	2KV BL(N) 470PF K (T)	
ZZ290	PTMPMSK123	PCB MAIN MANUAL AS	DTQ-21U4SSN		C814	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
10	2193102005	SOLDER BAR	SN:PB-63:37 S63S-1320		C815	CEXF2A470V	C ELECTRO	100V RSS 47MF (10X16) TP	
30	2291050616	FLUX SOLDER	JS-64T3		C817	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
40	2291050301	FLUX SOLVENT	IM-1000		C820	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C404	CMYH3C822J	C MYLAR	1.6KV BUP 8200PF J	△	C829	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP	
C406	CMYF2G304J	C MYLAR	400V MPP 0.30MF J	△	C832	CBXB3D471K	C CERA SEMI	2KV BL(N) 470PF K (T)	
C801	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVSNDF/SV)+Q/O		ZZ200	PTMPJBK123	PCB MAIN M-10 AS	DTQ-21U4SSN	
C804	CEYD2D331D	C ELECTRO	200V FHS 330MF (22X30)		10	2TM18006BE	TAPE MASKING	6.2X500	
C881	CH1BFE222M	C CERA AC	U/C V AC400V 2200PF		E001	4856310300	EYE LET	BSR T0.2 (R1.6)	
D704	DLH2PR—	LED BLOCK	LH-2P-R		E002	4856310300	EYE LET	BSR T0.2 (R1.6)	
D807	DRGP30J—	DIODE	RGP30J DO-201AD 600V 3A		E003	4856310300	EYE LET	BSR T0.2 (R1.6)	
I301	PTA2SW7912	HEAT SINK ASS'Y	1LA78041— + 7174300811	®	E006	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	1LA78041—	IC VERTICAL	LA78041		E009	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000A	4857027912	HEAT SINK	AL EX		E010	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E011	4856310300	EYE LET	BSR T0.2 (R1.6)	
I601	1TDA7267—	IC AUDIO AMP	TDA7267	®	E012	4856310300	EYE LET	BSR T0.2 (R1.6)	
I602	1TDA7267—	IC AUDIO AMP	TDA7267	®	E013	4856310300	EYE LET	BSR T0.2 (R1.6)	
I703	124LC04B—	IC MEMORY	24LC04B		E014	4856310600	EYE LET	BSR T0.2 (R2.3)	
I801	PTE2SW7912	HEAT SINK ASS'Y	1STRW6735- + 7174300811		E015	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	1STRW6735-	IC POWER	STR-W6735	△ , ®	E018	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000A	4857027912	HEAT SINK	AL EX		E019	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E021	4856310600	EYE LET	BSR T0.2 (R2.3)	
IL701	1KRT30—	IC PREAMP	KRT30		E022	4856310300	EYE LET	BSR T0.2 (R1.6)	
JP01	4859109950	JACK PIN BOARD	PH-JB-9710A		E023	4856310600	EYE LET	BSR T0.2 (R2.3)	
JP02	4859110150	JACK PIN BOARD	YS01-9615D		E024	4856310300	EYE LET	BSR T0.2 (R1.6)	

# ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
E025	4856310300	EYE LET	BSR T0.2 (R1.6)		C401	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
E026	4856310600	EYE LET	BSR T0.2 (R2.3)		C403	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
E027	4856310600	EYE LET	BSR T0.2 (R2.3)		C411	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
E028	4856310600	EYE LET	BSR T0.2 (R2.3)		C413	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
E029	4856310600	EYE LET	BSR T0.2 (R2.3)		C416	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
E030	4856310300	EYE LET	BSR T0.2 (R1.6)		C418	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
E032	4856310300	EYE LET	BSR T0.2 (R1.6)		C451	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
E033	4856310300	EYE LET	BSR T0.2 (R1.6)		C452	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
E034	4856310300	EYE LET	BSR T0.2 (R1.6)		C501	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
E035	4856310600	EYE LET	BSR T0.2 (R2.3)		C502	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
E036	4856310300	EYE LET	BSR T0.2 (R1.6)		C506	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
E037	4856310300	EYE LET	BSR T0.2 (R1.6)		C514	CMXL1J105J	C MYLAR	63V MEU 1MF J	
E038	4856310300	EYE LET	BSR T0.2 (R1.6)		C516	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
E039	4856310300	EYE LET	BSR T0.2 (R1.6)		C517	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP	
E042	4856310600	EYE LET	BSR T0.2 (R2.3)		C520	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
E043	4856310600	EYE LET	BSR T0.2 (R2.3)		C523	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
E044	4856310600	EYE LET	BSR T0.2 (R2.3)		C524	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
E045	4856310600	EYE LET	BSR T0.2 (R2.3)		C526	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
E046	4856310600	EYE LET	BSR T0.2 (R2.3)		C576	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
E047	4856310600	EYE LET	BSR T0.2 (R2.3)		C603	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
E048	4856310300	EYE LET	BSR T0.2 (R1.6)		C604	CEXF1C220V	C ELECTRO	RSS 16V 22MF 5'11	
E049	4856310600	EYE LET	BSR T0.2 (R2.3)		C605	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
E050	4856310600	EYE LET	BSR T0.2 (R2.3)		C613	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
E051	4856310600	EYE LET	BSR T0.2 (R2.3)		C614	CEXF1C220V	C ELECTRO	RSS 16V 22MF 5'11	
E052	4856310600	EYE LET	BSR T0.2 (R2.3)		C634	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
E057	4856310300	EYE LET	BSR T0.2 (R1.6)		C662	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
E058	4856310300	EYE LET	BSR T0.2 (R1.6)		C701	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
N401	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C706	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
N402	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C707	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
N403	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C712	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
N404	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C816	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
P102	485923182S	CONN WAFER	YW025-05 (STICK)		C821	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP	
P401	485923172S	CONN WAFER	YW025-04 (STICK)		C835	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
P601	485923162S	CONN WAFER	YW025-03 (STICK)		C871	CMXL1J104J	C MYLAR	63V MEU 0.1MF J	
P602	485923162S	CONN WAFER	YW025-03 (STICK)		C878	CEXF2C109V	C ELECTRO	160V RSS 1MF (6.3X11) TP	
P801A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C890	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
P801B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C893	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
R301	RS02Z471JS	R M-OXIDE FILM	2W 470 OHM J SMALL		F801	5FWPS4022L	FUSE	WIDE TL 250V 4A CASE	
R302	RS02Z561JS	R M-OXIDE FILM	2W 560 OHM J SMALL		I803	1K1A431B—	IC REGULATOR(SHUNT)	KIA431B 2.495V 0.5% TO-92	
R303	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL		L601	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
R305	RS02Z181JS	R M-OXIDE FILM	2W 180 OHM J SMALL		L805	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
R315	RS02Z751JS	R M-OXIDE FILM	2W 750 OHM J SMALL		Q401	TKSC2330Y-	TR	KSC2330Y (TP)	
R402	RS02Z302JS	R M-OXIDE FILM	2W 3K OHM J SMALL		Q403	TKTC3205Y-	TR	KTC3205Y (TP)	
R403	RS02Z163JS	R M-OXIDE FILM	2W 16K OHM J SMALL		Q404	TKTC3198Y-	TR	KTC3198Y	
R405	RS02Z241JS	R M-OXIDE FILM	2W 240 OHM J SMALL		Q501	TKTA1266Y-	TR	KTA1266Y (TP)	
R411	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL		Q545	TKTC3198Y-	TR	KTC3198Y (TP)	
R412	RS02Z279JS	R M-OXIDE FILM	2W 2.7 OHM J SMALL		Q546	TKTA1266Y-	TR	KTA1266Y (TP)	
R413	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL		Q575	TKSA1013Y-	TR	KSA1013Y (TP)	
R414	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL		Q653	TKTC3198Y-	TR	KTC3198Y	
R420	RS02Z620JS	R M-OXIDE FILM	2W 62 OHM J SMALL		Q654	TKTC3198Y-	TR	KTC3198Y	
R453	RS02Z270JS	R M-OXIDE FILM	2W 27 OHM J SMALL		Q701	TKTC3205Y-	TR	KTC3205Y (TP)	
R601	RF01Z688K-	R FUSIBLE	1W 0.68 OHM K (TAPPING)		Q703	TKTC3198Y-	TR	KTC3198Y	
R715	RS02Z680JS	R M-OXIDE FILM	2W 68 OHM J SMALL		Q707	TKTC3198Y-	TR	KTC3198Y	
R805	RS02Z228JS	R M-OXIDE FILM	2W 0.22 OHM J SMALL		Q801	TKTC3205Y-	TR	KTC3205Y (TP)	
R816	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL		Q807	TKTC3205Y-	TR	KTC3205Y (TP)	
ZZ200	PTMPJRK123	PCB MAIN RADIAL AS	DTQ-21U4SSN		Q873	TKTC3198Y-	TR	KTC3198Y	
C101	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		R809	RN01B913JS	R METAL FILM	1W 91K OHM J SMALL	
C102	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP		SW701	5S50101090	SW TACT	THVH472GCA	
C103	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP		SW702	5S50101090	SW TACT	THVH472GCA	
C114	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP		SW703	5S50101090	SW TACT	THVH472GCA	
C123	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP		SW704	5S50101090	SW TACT	THVH472GCA	
C124	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)		SW705	5S50101090	SW TACT	THVH472GCA	
C125	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP		SW706	5S50101090	SW TACT	THVH472GCA	
C235	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP		X502	5XEX3R579C	CRYSTAL QUARTZ	HC-49U 3.579545M (TP)	
C305	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP		Z501	5PXT4R5MB	FILTER CERA	XT 4.5MB-TP	
C308	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)		Z502A	5PXL4R5MT	FILTER CERA	LT 4.5MH-TP	
C311	CEXD1H229Q	C ELECTRO	50V RT 2.2MF (6.3X11) TP		ZZ200	PTMPJAK123	PCB MAIN AXIAL AS	DTQ-21U4SSN	
C312	CMXL1J105J	C MYLAR	63V MEU 1MF J		10	2TM14006LB	TAPE MASKING	3M #232 6.0X200M	

## ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X200M		J004	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
A001	4859816692	PCB MAIN	330X246 S1B		J006	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C109	CCZF1H103Z	C CERA	50V F 0.01MF Z		J007	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C115	CCZF1H103Z	C CERA	50V F 0.01MF Z		J008	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C116	CCZF1H103Z	C CERA	50V F 0.01MF Z		J009	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C118	CZSL1H470J	C CERA	50V SL 47PF J (AXIAL)		J010	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C122	CCZB1H471K	C CERA	50V B 470PF K (AXIAL)		J011	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C152	CCZF1H103Z	C CERA	50V F 0.01MF Z		J012	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C503	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J013	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C505	CZCH1H180J	C CERA	50V CH 18PF J (AXIAL)		J014	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C507	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)		J015	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C508	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)		J016	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C515	CCZB1H222K	C CERA	50V B 2200PF K AXIAL		J017	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C519	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J018	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C522	CCZF1H103Z	C CERA	50V F 0.01MF Z		J019	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C525	CCZF1H103Z	C CERA	50V F 0.01MF Z		J020	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C561	CCZF1H103Z	C CERA	50V F 0.01MF Z		J021	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C612	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J022	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C708	CCZF1H103Z	C CERA	50V F 0.01MF Z		J023	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C711	CCZF1H103Z	C CERA	50V F 0.01MF Z		J024	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C713	CCZF1H103Z	C CERA	50V F 0.01MF Z		J025	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C714	CCZB1H221K	C CERA	50V B 220PF K (AXIAL)		J026	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C715	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J027	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C716	CCZF1H103Z	C CERA	50V F 0.01MF Z		J028	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C717	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J029	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C718	CCZF1H103Z	C CERA	50V F 0.01MF Z		J030	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C720	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J031	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C891	CCZB1H821K	C CERA	50V B 820PF K AXIAL		J032	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C892	CCZB1H471K	C CERA	50V B 470PF K (AXIAL)		J033	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
C894	CCZB1H333K	C CERA	50V B 0.033MF K AXL		J034	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D101	DUZ33B—	DIODE ZENER	UZ-33B		J035	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D102	DUZ5R1B—	DIODE ZENER	UZ-5.1B		J036	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D301	D1N4004S—	DIODE	1N4004S		J037	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D311	DBZX55C62-	DIODE ZENER	BZX55C-62		J038	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D312	85801060GY	WIRE COPPER	1/0.6 TIN COATING		J039	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D401	D1N4937G—	DIODE	1N4937G (TAPPING)		J040	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D405	D1N4937G—	DIODE	1N4937G (TAPPING)		J041	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D406	D1N4937G—	DIODE	1N4937G (TAPPING)		J042	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D407	D1N4937G—	DIODE	1N4937G (TAPPING)		J043	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D408	D1N4937G—	DIODE	1N4937G (TAPPING)		J044	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D409	D1N4148—	DIODE	1N4148 (TAPPING)		J045	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D451	D1N4937G—	DIODE	1N4937G (TAPPING)		J046	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D501	DUZ5R1B—	DIODE ZENER	UZ-5.1B		J047	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D506	DMTZ5R6B-	DIODE ZENER	MTZU 5.6B		J048	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D507	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM		J049	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D509	D1N4148—	DIODE	1N4148 (TAPPING)		J050	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D525	D1N4148—	DIODE	1N4148 (TAPPING)		J051	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D571	D1N4148—	DIODE	1N4148 (TAPPING)		J052	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D572	D1N4148—	DIODE	1N4148 (TAPPING)		J053	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D573	D1N4148—	DIODE	1N4148 (TAPPING)		J054	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D574	D1N4148—	DIODE	1N4148 (TAPPING)		J055	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D601	D1N4148—	DIODE	1N4148 (TAPPING)		J056	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D804	D1N4937G—	DIODE	1N4937G (TAPPING)		J057	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D809	DMTZ6R8C-	DIODE ZENER	MTZU 6.8C		J058	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D811	D1N4937G—	DIODE	1N4937G (TAPPING)		J059	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D812	D1N4148—	DIODE	1N4148 (TAPPING)		J060	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D813	D1N4937G—	DIODE	1N4937G (TAPPING)		J061	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D816	D1N4937G—	DIODE	1N4937G (TAPPING)		J062	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D817	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM		J063	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D819	D1N4937G—	DIODE	1N4937G (TAPPING)		J064	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D851	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM		J065	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D881	DLT2A05G—	DIODE	LT2A05G (TP)		J066	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D882	DLT2A05G—	DIODE	LT2A05G (TP)		J067	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D883	DLT2A05G—	DIODE	LT2A05G (TP)		J068	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D884	DLT2A05G—	DIODE	LT2A05G (TP)		J069	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J001	85801060GY	WIRE COPPER	1/0.6 TIN COATING		J070	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J002	85801060GY	WIRE COPPER	1/0.6 TIN COATING		J071	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J003	85801060GY	WIRE COPPER	1/0.6 TIN COATING		J072	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
					J073	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
					J074	85801060GY	WIRE COPPER	1/0.6 TIN COATING	

ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
J075	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R117	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
J076	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R150	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J077	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R151	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
J078	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R229	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
J080	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R230	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J083	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R306	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
J084	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R307	RD-AZ243J-	R CARBON FILM	1/6 24K OHM J	
J085	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R308	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
J086	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R309	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
J087	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R310	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
J088	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R312	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
J089	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R350	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J090	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R351	RD-AZ302J-	R CARBON FILM	1/6 3K OHM J	
J091	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R352	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
J092	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R401	RD-AZ472J-	R CARBON FILM	1/4 4.7K OHM J	
J093	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R415	RD-AZ224J-	R CARBON FILM	1/4 220K OHM J	
J094	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R416	RD-ZZ121J-	R CARBON FILM	1/2 120 OHM J	
J095	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R417	RD-AZ302J-	R CARBON FILM	1/4 3K OHM J	
J096	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R423	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J097	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R424	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
J098	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R451	RD-AZ123J-	R CARBON FILM	1/4 12K OHM J	
J099	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R452	RD-AZ912J-	R CARBON FILM	1/4 9.1K OHM J	
J100	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R454	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J101	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R502	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
J102	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R504	RD-AZ124J-	R CARBON FILM	1/6 120K OHM J	
J103	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R505	RD-AZ103J-	R CARBON FILM	1/4 10K OHM J	
J104	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R507	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
J105	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R508	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
J106	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R510	RD-AZ105J-	R CARBON FILM	1/6 1M OHM J	
J107	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R511	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
J108	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R512	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
J109	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R513	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
J110	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R514	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
J111	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R515	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
J112	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R516	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J113	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R517	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J114	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R518	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J115	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R520	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
J116	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R521	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
J117	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R522	RD-AZ433J-	R CARBON FILM	1/6 43K OHM J	
J118	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R523	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
J119	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R524	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
J120	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R526	RD-AZ432J-	R CARBON FILM	1/6 4.3K OHM J	
J121	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R527	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
J122	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R528	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
J123	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R529	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
J124	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R530	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J125	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R531	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J126	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R532	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J127	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R602	RD-ZZ271J-	R CARBON FILM	1/2 270 OHM J	
J128	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R603	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
J129	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R604	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
J130	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R605	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
J131	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R606	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
J132	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R607	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
J133	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R629	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
J135	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R630	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
J230	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R652	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
L111	5CPZ568M02	COIL PEAKING	0.56UH M (AXIAL 3.5MM)		R654	RD-AZ442J-	R CARBON FILM	1/6 2.4K OHM J	
L501	5CPZ180K02	COIL PEAKING	18UH K (AXIAL 3.5MM)		R655	RD-AZ424J-	R CARBON FILM	1/6 2.4K OHM J	
L602	5MC0000100	COIL BEAD	HC-3550		R656	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
L603	5MC0000100	COIL BEAD	HC-3550		R701	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
L631	85801060GY	WIRE COPPER	1/0.6 TIN COATING		R702	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
L807	5MC0000100	COIL BEAD	HC-3550		R703	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
L811	5MC0000100	COIL BEAD	HC-3550		R704	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
L841	5MC0000100	COIL BEAD	HC-3550		R706	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R112	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J		R708	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R115	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J		R710	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	

## ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R711	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R712	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R713	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R714	RD-AZ479J-	R CARBON FILM	1/6 4.7 OHM J	
R716	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R717	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R718	RD-AZ154J-	R CARBON FILM	1/6 150K OHM J	
R719	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R720	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
R722	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R723	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R724	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R725	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R726	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R730	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R730A	RD-AZ433J-	R CARBON FILM	1/6 43K OHM J	
R731	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R732	RD-AZ242J-	R CARBON FILM	1/6 2.4K OHM J	
R733	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R734	RD-AZ752J-	R CARBON FILM	1/6 7.5K OHM J	
R750	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R751	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R789	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R790	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R814	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R815	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R819	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R820	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R823	RD-AZ561J-	R CARBON FILM	1/4 560 OHM J	
R835	RD-AZ109J-	R CARBON FILM	1/4 1 OHM J	
R868	RN-422201F	R METAL FILM	1/4 2.20K OHM F	
R869	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R872	RD-AZ152J-	R CARBON FILM	1/4 1.5K OHM J	
R874	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R875	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
R876	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R877	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R878	RN-421003F	R METAL FILM	1/4 100K OHM F	
R879	RN-4Z7501F	R METAL FILM	1/4 7.5K OHM F	
R881	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R885	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R890	RD-AZ152J-	R CARBON FILM	1/4 1.5K OHM J	
R892	RD-AZ152J-	R CARBON FILM	1/4 1.5K OHM J	
R893	RD-4Z331J-	R CARBON FILM	1/4 330 OHM J	
R894	RD-AZ479J-	R CARBON FILM	1/4 4.7 OHM J	
ZZ300	PTCPMSK123	PCB CRT MANUAL AS	DTQ-21U4SSN	
C906	CH1BEE222M	C CERA AC	U/CV 2.5KV 2200PF TP	
C914	CEYF2E100V	C ELECTRO	250V RSS 10MF (10X20)	
P102A	4850705S04	CONNECTOR	YH025-05+YBNH250+ULW=400	
P401A	4850704S04	CONNECTOR	YH025-04+YST025+ULW=400	
Q901	TKTC3229—	TR	KTC3229	
Q902	TKTC3229—	TR	KTC3229	
Q903	TKTC3229—	TR	KTC3229	
SCT1	4859304130	SOCKET CRT	ISHG93S	
ZZ200	PTCPJRK123	PCB CRT M-10 AS	DTQ-21U4SSN	
E001	4856310300	EYE LET	BSR T0.2 (R1.6)	
E002	4856310300	EYE LET	BSR T0.2 (R1.6)	
E003	4856310300	EYE LET	BSR T0.2 (R1.6)	
E004	4856310300	EYE LET	BSR T0.2 (R1.6)	
ZZ200	PTCPJRK123	PCB CRT RADIAL AS	DTQ-21U4SSN	
L901	5CPX181J—	COIL PEAKING	180UH J (RADIAL)	
Q904	TKTC3198Y-	TR	KTC3198Y	
Q905	TKTC3198Y-	TR	KTC3198Y	
Q906	TKTC3198Y-	TR	KTC3198Y	
Q907	TKTA1266Y-	TR	KTA1266Y (TP)	
R921	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R922	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R923	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	

## ELECTRICAL PARTS LIST

### 110V / FREE VOLT DIFFERENTIAL PARTS LIST

LOC	PARTS_NAME	DTQ-2133/21U4SSN		DTQ-2133SSFN	
		S/N	PARTS_DESC.	S/N	PARTS_DESC.
00020	ADAPTER	4859000240	2P15A 300V(D=4.0)		
C804	C ELECTRO	CEYD2D331D	200V FHS 330MF(22X30)	CEYD2G181D	400V FHS 180MF(25X35)
C810	C CERA	CCXB2H222K	500V B 2200PF K (TAPPING)	CCXB3A472K	1KV B 4700PF K (TAPPING)
C811	C CERA	CCXB2H222K	500V B 2200PF K (TAPPING)	CCXB3A472K	1KV B 4700PF K (TAPPING)
I801	HEAT SINK ASS'Y	PTE2SW7912	1STRW6735- + 7174300811	PTD2SW7912	1STRW6735- + 7174300811
PWC1	CORD POWER AS	4859902710	KJ-10+SPT-2+YPT018=2100	4859900910	KKP-419C+YPT-018=2100
R805	R M-OXIDE FILM	RS02Z228JS	2W 0.22 OHM J SMALL	RS02Z338JS	2W 0.33 OHM J SMALL
R882	POSISTOR	DDB3R0M140	ECPBD3R0M140	DDB7R0M290	ECPBD7R0M290

### CRT DIFFERENTIAL PART LIST(LG PHILIPS, DOMEX)

NO	L/C	PART NAME	LG PHILIPS SLIM	DOMEX	REMARKS
1	V901	CRT	4859641460 (A51QDJ470X03)	485964060 (A51QDK090X030)	CRT DIFFERENTIAL
2	R412	R M-OXIDE FILE	RS02Z279JS (2W, 2.7 Ω)	RS02Z309JS (2W, 3 Ω)	HEATER VOLTAGE
3	R302	R M-OXIDE FILM	RS02Z561JS (2W, 560 Ω)	RS02Z681JS (2W, 680 Ω)	VERTICAL CENTER

# IC DESCRIPTION

## I. MICOM Outline.

### 1. Abstract.

This specification is 1-Tuner Mono Model for North America, CCD 1-Chip MICOM M37150.

It is developing software specification for tuning only NTSC system TV F/S.

## 2. H/W Outline.

1) ROM : 32K x 8bits.tsc

2) RAM : 1152 x 8bits.

3) OSD Function.

. Screen Display.

    32 characters x 2 lines.

- Characters.

    254 patterns programmable.

- Character display area

    CC mode : 16 x 26 dots

- Chatacter color : 8 colors

- Attribute

    CC mode : smooth italic, underline, flash, automatic solid space"

    OSD mode : border

- Display position

    Horizontal : 128 levels

    Vertical : 512 levels

## 3. System Feature.

- The system for TV tuning is Frequency Synthesis type.

- Closed Caption's function is built in IC.

- On Screen Display's function is built in IC.

- Package. : 42 PIN SSOP.

- Tuner (Pre-scaler.) : I2C Bus. --- DT5-NF20F N

- Remote. : R-43A Series

- E2PROM. : 24C04(I2C Bus) ? Apply one byte Read/Write mode.

- 6-Local Key. : A/D Input Control.(Power, Ch Up/Down, Vol Up/Down, Menu)

- Option S/W : Port Input Option Check.

- IF/V/C/D IC : M61250(America, The only NTSC)"

## 4. Function.

1) C. C. D. function.

- A section of C. C. D. operates FCC based specification.

2) C. C. D. controlled function.

- Closed Caption Mode. (Off<-->C1<-->C2<-->T1<-->T2<-->Off)
- CC On Mute.(Off / On)
- When CC On Mute is On, Output is selected a item of Closed Caption Modes.

### 3) Tuning Function.

- I2C Bus.
- PLL IC Interface.
- FS 181 Channel (AIR 2-69CH, CABLE 1-125CH)"
- AFT Operation(Fine Tuning ) -2.5 ~ Fn ~ +2.5MHz
- AIR/CABLE (STD, HRC, IRC ). Only Cable 5,6CH is that AFT range is cover over broad-band. -2.5MHz ~ Fn ~ +3.5MHz.
- Auto Program.(If a channel is broadcasting, the channel is memorized.)"
- Direct Tuning(0 ~ 9KEY)
- Channel Up/Down.(Memorized Channels) -> The Ch Up/Down buttons on the Remote and on the front panel are same function.
- Search Channel Up/Down.(If No-Memory or only 1CH is Memory)
- Channel Memory.(ADD/DELETE)
- Channel Review Function.
- Last Channel Memory Function.

### 4) OSD Function.

- In Video Mode, Things(Items) that is concerned with Air and Cable disappear in the Menu."
- Channel, AV display.
- Small & Graphic ICON Menu.
- Volume, Picture Control --> I2C Bus Control

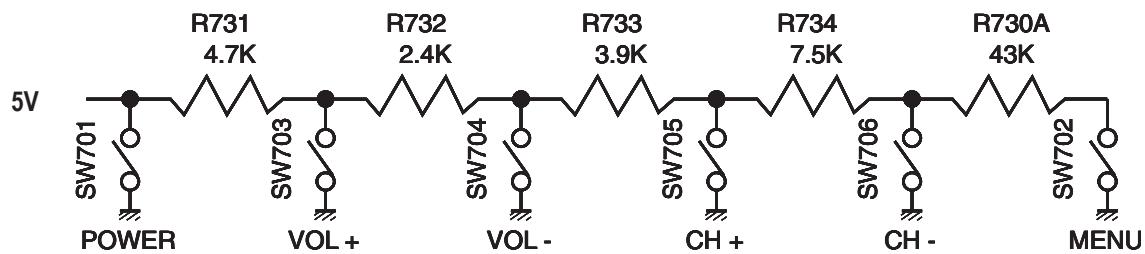
### 5) The Others Function.

- Video/Audio Mute Function.
- If a Channel is no signal, it is Auto-Power Off Function after 15 minutes."
- Heat Run Function. --- OSD White Background.
- Sleep Timer, Wake-Up Time, Off Time Function. "
- Audio Mode :Mono
- TV/Line Controlled function- ----- (Option)
- Prison Controlled function- ----- (Option)
- 3-Language.(North America : ENG/SPA/FRA ).
- E2PROM Interface (I2C Bus Control)
- CH 6 TRAP Function.(IS-31 對應)
- PLL IC Band Data.(Control Byte 2-->P3~P0)  
VHF L : 1 / VHF H : 2 / CH6 TRAP : 5 (IS-31) AIR(Cable) CH 6 Only    UHF : 8

## 5. The Table of Option and Schedule

PIN	OPTION	REFERENCE	REMARKS
#1	TV ONLY (H)	LOW (DC 0V): VIDEO	(L) : Video Model ("V" Series)
		HIGH (DC 5V) : TV	(H) : No Video Model ("P" Series)
#41	PRISON	LOW (DC 0V): NORMAL	(L) : Normal Video
		HIGH (DC 5V) : PRISON	(H) : Clock Menu (TIME) delete

## 6. KEY Matrix



KEY	FUNCTION	VALUE(V)
SW701	POWER	0 ~ 0.55
SW703	VOL +	2.25 ~ 2.75
SW704	VOL -	2.76 ~ 3.25
SW705	CH +	3.26 ~ 3.75
SW706	CH -	3.76 ~ 4.25
SW702	MENU	4.26 ~ 4.75

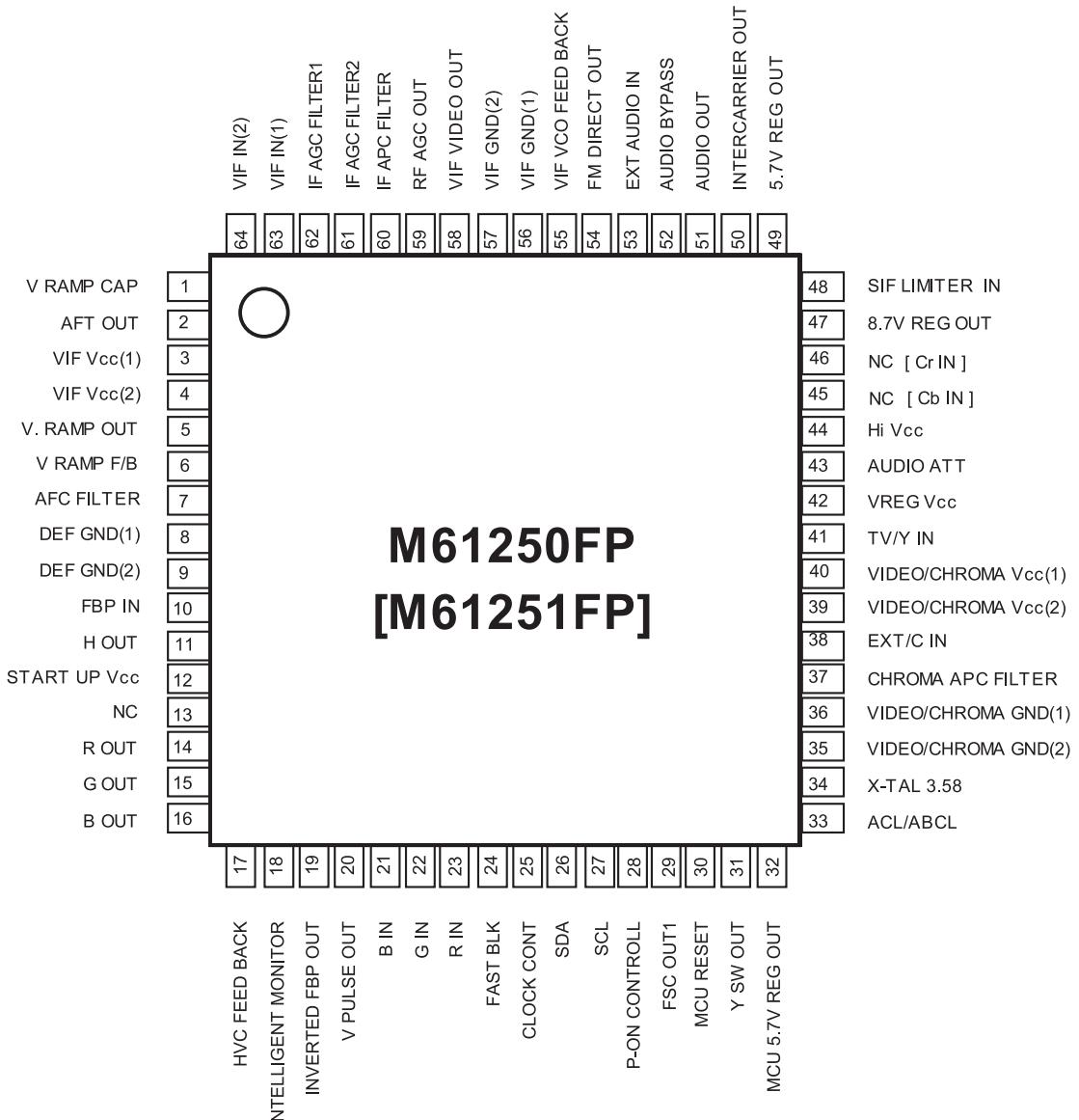
## II. PIN ASSIGN

TV ONLY	1	P11/SCL1	P12/SCL2	42	CLOCK(EEPROM)
TV / Y	2	P00/PWMO	P13/SDA1	41	PRISON
AV1/AV2	3	P01/PWM1	P14/SDA2	40	DATA(EEPROM)
DG ON RELAY	4	P02/PWM2	P16/AD8/TIM2	39	MONITOR
S-IN	5	P03/PWM3/AD1	P50/H SYNC	38	H SYNC
TV/AV	6	P04/PWM4/AD2	P51/V SYNC	37	V SYNC
AFT IN	7	P16	P52/B	36	B
X-RAY	8	P06/INT2/AD4	P53/G	35	G
X-RAY2	9	P07/INT2	P54/R	34	R
ST-BY LED	10	P20/SCLK/AD5	P55/OUT	33	OUT
NC	11	P21/SOUT/AD6	CLKCOUNT/P10	32	CLK COUNT
KEY1	12	P22/SIN/AD7	P30/SDA3	31	SDA
BUS STOP	13	P23/TM3	P31/SCL3	30	SCL
S-MUTE	14	P24/TM2	P15	29	POWER
REMOCON IN	15	P25/INT3	FSCIN	28	FSC IN
NC	16	P26/XIN	RESET	27	RESET
NC	17	P27/XOUT	CVIN	26	CCD CVBS
CNVSS	18	CNVSS	VHOLD	25	CCD V-HOLD
GND	19	X-IN	HLF	24	CCD HLF
NC	20	X-OUT	FILT	23	FILT
VSS	21	VCC	VCC	22	VCC

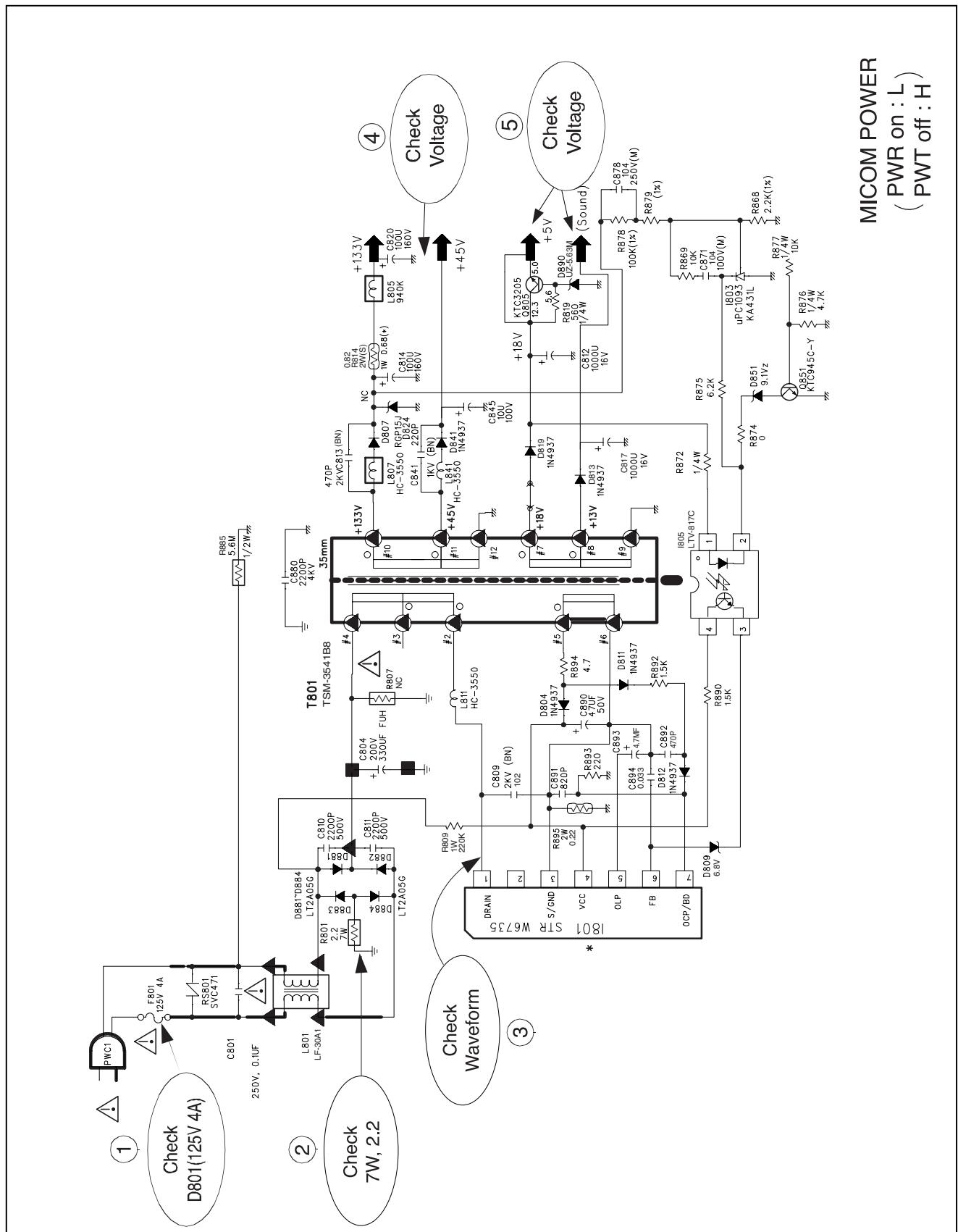
## III. PIN DESCRIPTION

Pin	Symbol	NAME	I/O	Description	REMARKS
1	P11/SCL1	TV ONLY	O	TV ONLY(H), VIDEO(L)	OPTION
2	P00/PWM0	TV/Y	I	CVIN IN	
3	P01/PWM1	AV1/AV2	I	AV1/AV2 SW	
4	P02/PWM2	D/G ON	O	D/G RELAY ON(H)	
5	P03/PWM3/ADI	S-IN	I	S-VHS Jack Signal Input	
6	P04/PWM4/AD2	TV/AV	I	TV/VIDEO SW,TV(H),VIDEO(L)	
7	P05/AD3	AFT IN	I	Default Voltage:3.75V	
8	P06/INT2/AD4	X-RAY	I	B+ PROTECT(L)	
9	P07/INT1	X-RAY2	I	고압 PROTECT, OCP	
10	P20/SCLK/AD5	ST-BY LED	O	POWER OFF --> ST-BY(H)	
11	P21/SOUT/AD6	NC		NC	
12	P22/SIN/AD7	KEY1	I	MENU, VOL+,VOL-, CH+,CH-, POWER	
13	P23/TIM3	BUS STOP	I	FACTORY MODE	
14	P24/TIM2	S-MUTE	O	AUDIO MUTE(H)	
15	P25/INT3	REMOCON	I	Remocon Signal Input	
16	P26/XCIN	NC		NC	
17	P27/XCOUT	NC		NC	
18	CNVSS	CNVSS		GND	
19	X-IN	GND		GND	
20	X-OUT	NC		NC	
21	VSS	VSS		GND(Negative Power Supply)	
22	VCC	VCC	I	+5V(Positive Power Supply)	
23	FILT	FILT	I	Clock Oscillation Filter	
24	HLF	CCD HLF	I/O	I/O for Data Slicer	
25	VHOLD	CCD V-HOLD	I/O	I/O for Data Slicer	
26	CVIN	CCD CVBS	I	Composite Video Signal Input	
27	RESET	RESET	I	MCU RESET:Active(H)	
28	FSC IN	FSCIN	I	Clock Input	
29	P15	POWER	I	Chroma On/Off	
30	P31/SCL3	SCL	I/O	I2C Data IN/OUT	
31	P30/SDA3	SDA	I/O	I2C Data IN/OUT	
32	CLKCONT/P10	CLK CONT	I	CLK CONTROL	
33	P55/OUT	OUT	O	Fast Blanking Control Signal	
34	P54R	R	O	OSD Red Output	
35	P53G	G	O	OSD Green Output	
36	P52B	B	O	OSD Blue Output	
37	P51/V Sync	V Sync	I	Vertical Syn Signal Input	
38	P50/H Sync	H Sync	I	Horixental Syn Signal Input	
39	P16/AD8/TM2	MONTOR	I	Intelligent Monitor	
40	P14/SDA2	SDA2	I	EEPROM Data <--> Micom Data	
41	P13/SDA1	PRISON	I	Prison(H), Normal(L)	OPTION
42	P12/SCL2	SCL2	I	EEPROM Clock <--> Micom Clock	

## IV. M61250(CROMA) Pin Configuration

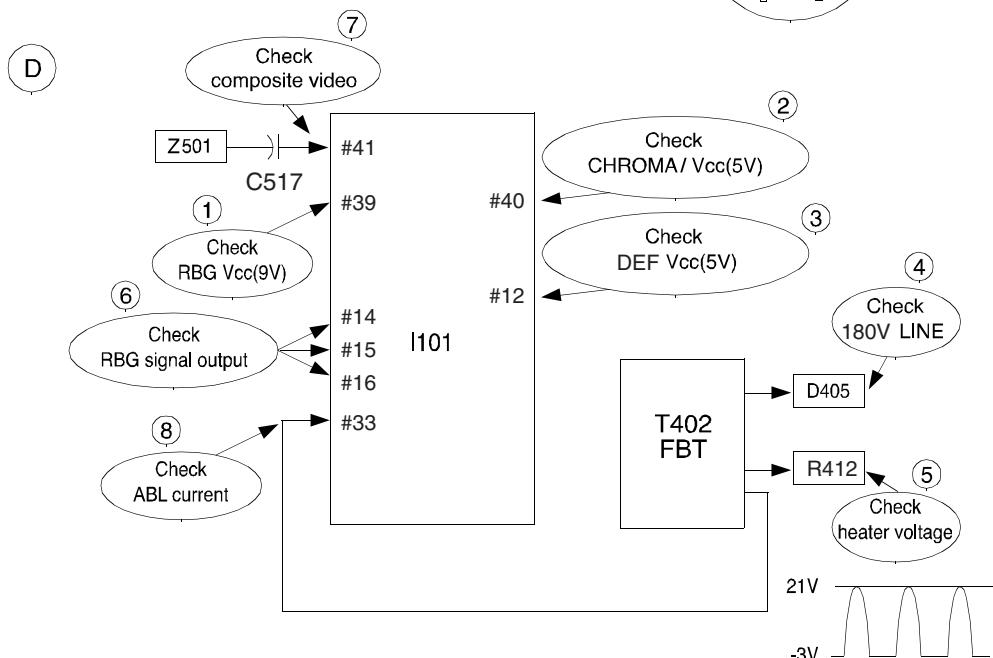
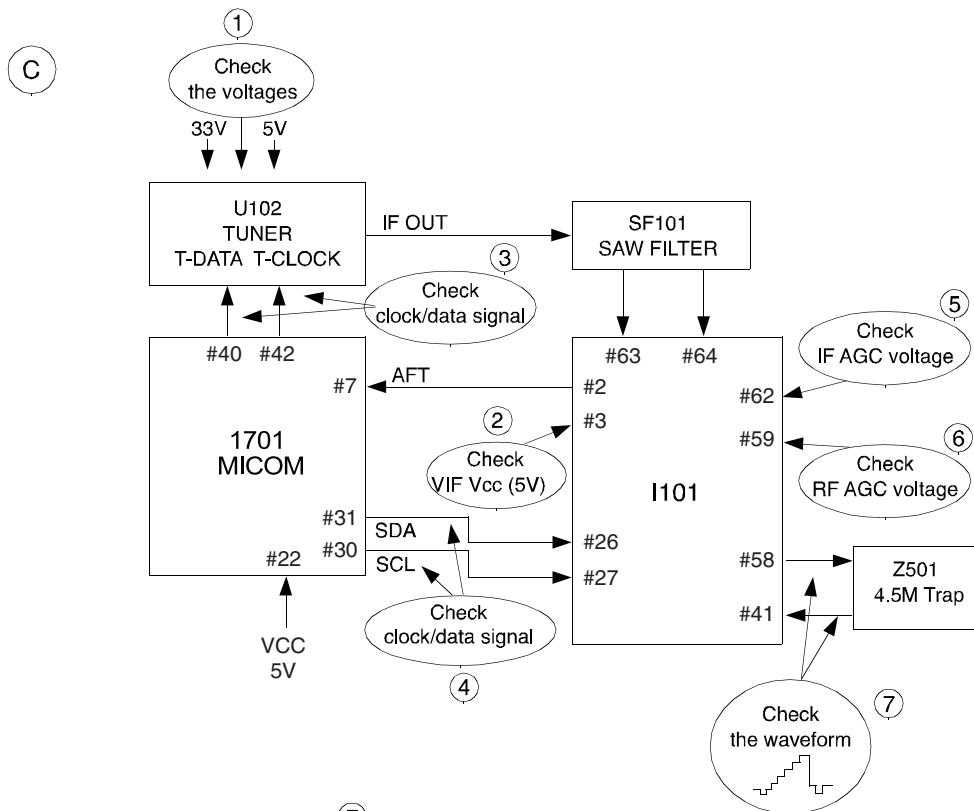


## 1. NO POWER



## 2. NO PICTURE

Check the waveform of I101 #58

NG : GO to the figure **C**OK : Go to the figure **D**

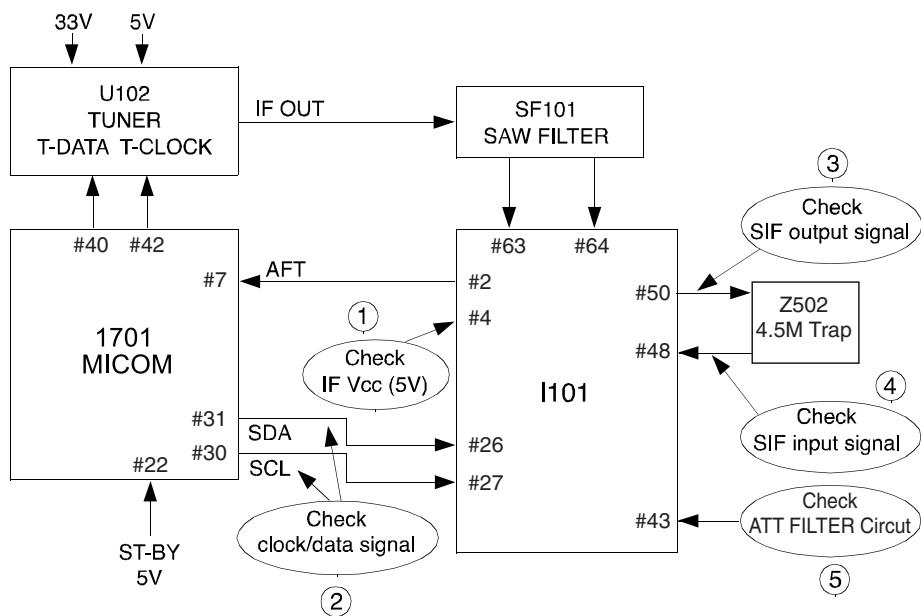
## 3. NO SOUND

Check audio output signal of I101 #51

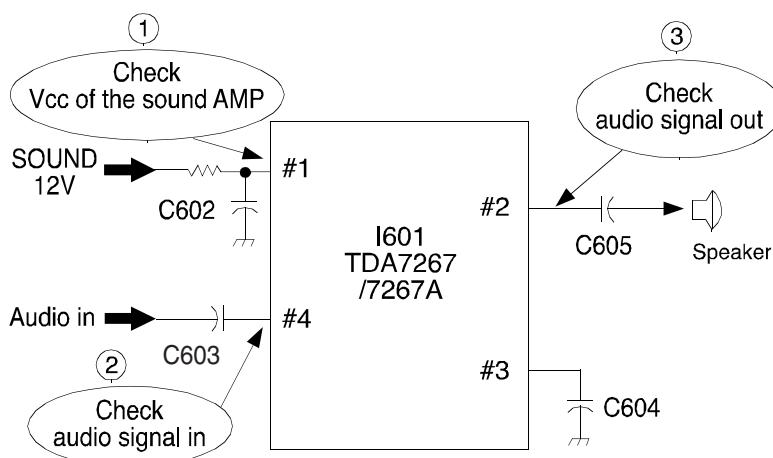
NG : Go to the figure ④

OK : Go to the figure ①

E



F

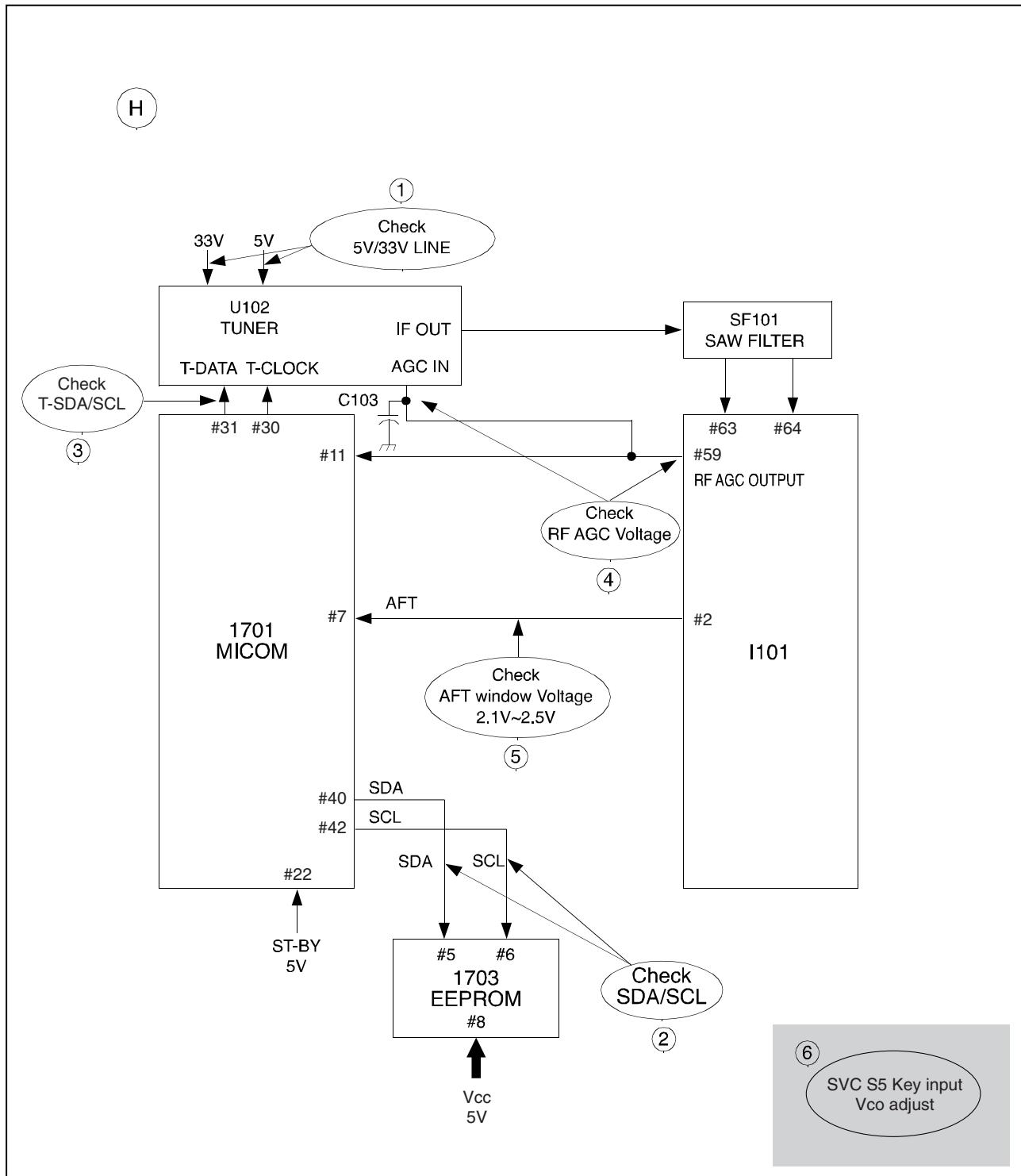


## 4. CH DON'T STOP

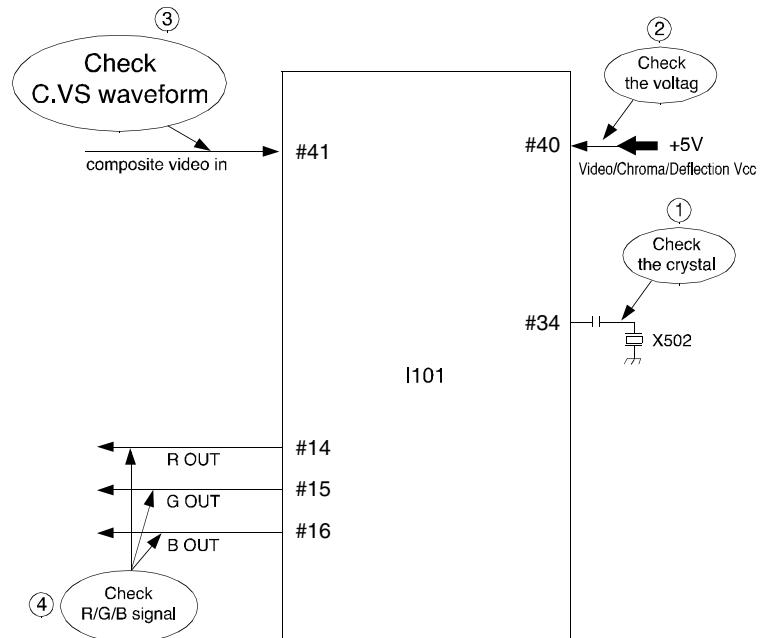
Check the input signal conditions

NG : Loss of signal or weak signal

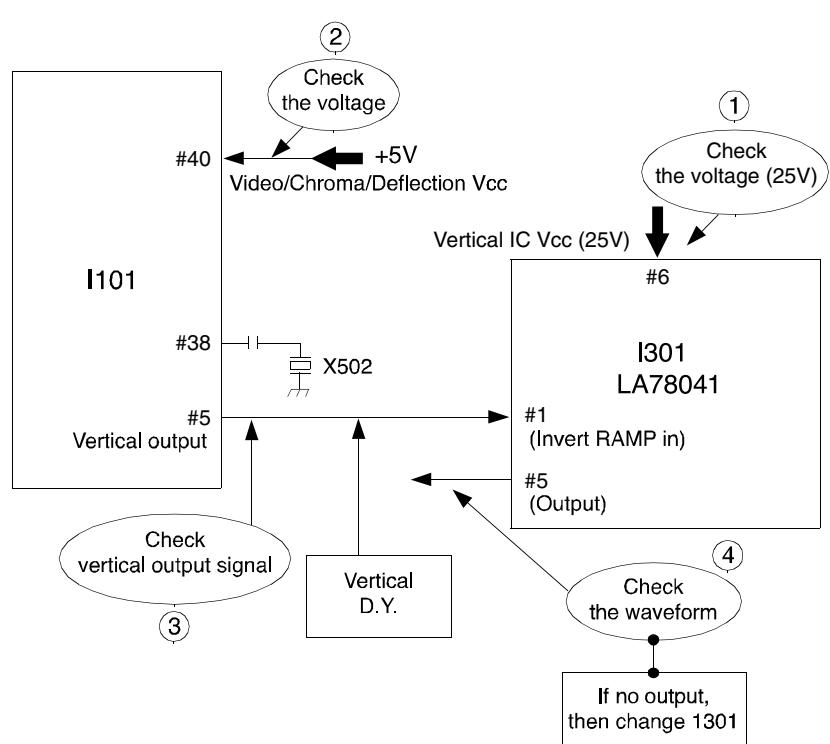
OK : Go to the figure(H)



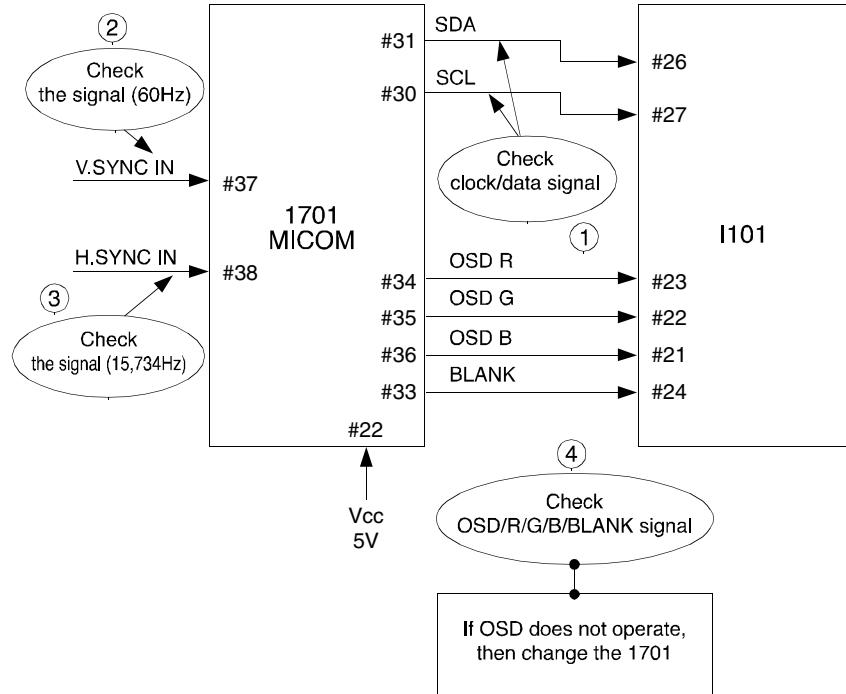
## 5. NO COLOR



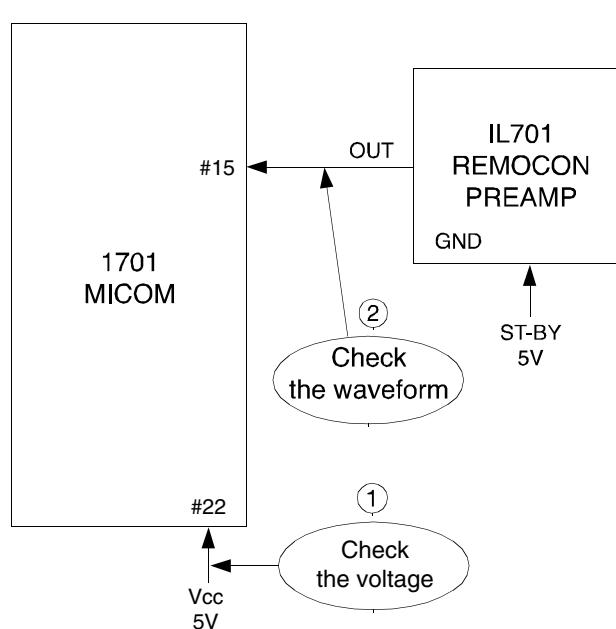
## 6. NO VERTICAL DEFLECTION



## 7. NO ON-SCREEN DISPLAY



## 8. REMOTE CONTROL DOES NOT OPERATE





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